



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

(A)

IDENTIFICATION PAGE

Applicant's Name

Worthington Armstrong Venture

Application No.

10/754,323

Filing Date of the Application

January 9, 2004

Title of the Invention

STAB-IN CONNECTOR

Name of the Examiner

Jeanette E. Chapman

Art Unit

3633

Title of the Paper

Appeal Brief

Attorney Docket No.

0326

Customer No.

02057

(B)

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(C)

REAL PARTY IN INTEREST

The real party in interest is:

Worthington Armstrong Venture
9 Old Lincoln Highway, Suite 200
Malvern, PA 19355
U.S.A.

Related companies:

Worthington Armstrong Venture is a joint venture,
formed in Delaware, between Worthington
Industries, Inc. and Armstrong World Industries,
Inc.

(D)

RELATED APPEALS AND INTERFERENCES

None

(E)

STATUS OF CLAIMS

Claim 1 Cancelled
Claim 2 Rejected; on appeal
Claim 3 Rejected; on appeal
Claim 4 Cancelled
Claim 5 Cancelled
Claim 6 Cancelled
Claim 7 Cancelled
Claim 8 Cancelled
Claim 9 Cancelled
Claim 10 Cancelled
Claim 11 Cancelled
Claim 12 Cancelled
Claim 13 Rejected; on appeal

(F)

STATUS OF AMENDMENTS

Applicant filed a Response, with an amendment, on March 11, 2010, to a Final Rejection dated September 29, 2009, by means of a Request for a Continuing Examination (RCE), within three months of the Final Rejection. The Response, including the amendment, was entered.

Applicant also filed a Supplemental Response dated April 5, 2010, further amending independent Claim 13. The Supplemental Response, including the amendment, was entered.

A non-final Office Action dated May 12, 2010 issued rejecting pending independent Claim 13, as amended in the Supplemental Response, dated April 5, 2010, and dependent Claims 2 and 3. Such rejected Claims 2, 3, and 13 are the subject of this appeal.

(G)

SUMMARY OF CLAIMED SUBJECT MATTER

In suspended ceilings, grids of rolled T-beams are formed of cross beams connected to main beams. The grid supports panels, or drywall sheets, to form the suspended ceiling surface. The grid is supported from a structural ceiling by hang wires.

In the prior art, a connector on the end of a cross beam was formed with a straight cantilevered locking latch, pivoted from a base, that was stabbed through a slot in a main beam. The locking latch locked the cross beam to the main beam, and to a connector on an opposing cross beam already in the slot.

In the improvement of the invention, the locking latch is formed with a curved portion, pivoted from the base, before extending in a straight lever fashion. Such curved portion of the locking latch delays contact of the locking latch with a side of the slot when the connector is stabbed through the slot. During the delay, the connector is capable of being adjusted vertically without being forced against the connector already in slot, thereby avoiding much friction, and work to overcome such friction.

Claim 13, the only independent claim on appeal, is written in Jepson form with first the prior art, and then the improvement on such prior art. In the following, Claim 13 is written with brief references to the application disclosure, by page and line, and to the drawings, by reference characters.

Claim 13: In a connector (21) for a suspended ceiling grid having a main beam (20) and cross beams (26,27),

- wherein a connector (21) on a cross beam (26)

(a) is capable of

being stabbed through a slot (23) in the main beam (20) to lock with the main beam (20), and with an opposing identical connector (22), already in the slot (23), on a cross beam (27), and

(b) has a cantilevered locking latch (40)

integral with and pivoted from a base (41) in the connector (21),

- and wherein,

(c) when the connector (21) is

stabbed through the slot (23) in the main beam (20), the locking latch (40) is capable of contacting a side of a slot (23) and being forced by a side of the slot (23) to flex toward the base (41) to permit the locking latch (40) to pass through the slot (23), and

(d) when the connector (21) has been stabbed

through the slot (23), the locking latch (40) is capable of flexing back to a relaxed position wherein it is pivoted away from the base (41), to lock the connector (21) on cross beam (26) to the main beam (20),

(The above defined prior art is disclosed in the specification from page 1, line 13, to page 3, line 1-2, and in the drawings in Figures 3 and 3a.)

the improvement comprising

the locking latch (40) formed with a curved portion before extending in straight lever fashion,

(page 9, lines 25 to 28 as follows: "In the improvement of the invention, the latch of the invention 40, as seen in Figures 2 and 2a, herein, is formed from the base 41 with a radius 42, for instance .04 inches, before extending in straight lever fashion.")

wherein the curved portion of locking latch (40) is capable of delaying contact of the locking latch (40) with a side of the slot (23) when the connector (21) is stabbed through the slot (23) in the main beam (20),

(page 9, lines 30 to 32; continued on page 10, lines 1 to 3 as follows: "Such a curve in locking latch 40 increases the distance 46 the second connector 21 or 22, enters into the slot 23 before it contacts the side of the slot 23 at 47 to create a resistance from such latch of the invention 40 against the side of the slot 23.")

(page 10, lines 12 to 18 as follows: "Further, the first contact of the latch of the invention 40 with the side of the slot 23 is further out from the point 51 of the latch of the invention 40 where it is joined to on the base 41, since part of the curved part of the latch of the invention 40 extends in the plane of the base 41 and is not exposed to contact by the side of the slot 23.")

(page 10, lines 29 to 31 as follows: "Thus, less force over a shorter distance is required to collapse the latch of the invention 40 than was required to collapse latch 10 in the prior art.")

and whereby connector (21) is capable of being adjusted vertically without being forced against the connector (22) already in the slot (23) by the locking latch (40) in contact with a side of slot (23).

(Page 11, line 21 to 32 as follows: "In the present invention, the taper 38 at the leading edge of the connector 21, 22 is made relatively abrupt, at a steeper angle, so that a relative immediate adjustment is made vertically to the connector as it is being inserted into the slot 23. Even though a more steep, immediate adjustment would normally require a greater insertion force than that of a gradual insertion, there is less, rather than more force required. This reduction in force is obtained by the delayed contact of the locking latch of the invention 40 with the side of slot 23, since there is virtually no drag or resistance from the locking latch of the invention 40.")

(H)

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 2, 3, and 13 are unpatentable under 35 U.S.C. 102(b) over Lickliter et al 3,312,488.

(I)

ARGUMENT

The Prior Art

In a suspended ceiling, cross beams and main beams are connected together to form a grid of repetitive rectangular openings, that support panels.

In a present day prior art connection in such suspended ceilings, opposing cross beams are connected to a main beam by inserting a connector on the end of a cross beam into a slot in the web of a main beam from opposite sides of the main beam, one at a time.

Such a present day prior art connector is formed with a straight latch, pivoted from a base in the connector, that is forced into a closed position, as it is squeezed against the side of the slot, as it passes through the slot. After passing through the slot, the latch springs back into an open position, locking the connector to the (a) main beam, and (b) separately to an identical connector on the opposing cross beam, already inserted into the slot from the opposite direction ("handshake" connection).

Thus, two different locking actions occur.

The resistance to making the connection begins when the pivoted straight latch contacts the side of the slot as the latch is being forced into the slot. Such contact also forces the connector against a connector already in the slot, as referred to above.

When fully inserted, the connector on the cross beam is connected to (a) the main beam, and (b) to the connector, on the opposing cross beam, already in the slot (the "handshake" connection).

The Improvement

As set forth above and in the specification, and as defined in claim 13, the invention relates to a connector on a cross beam that is capable of being stabbed through a slot to lock with

- (1) a main beam and
- (2) an opposing identical connector already in the slot.

In being stabbed through the slot, as further defined in claim 13, a cantilevered locking latch pivoted from the base of the connector contacts the side of the slot and is flexed toward the base to permit the locking latch to pass through the slot.

In the present invention as claimed, the cantilevered locking latch extends from the base in a curve, before extending in straight line fashion.

By extending the locking latch from the pivot in a curve, before extending in straight line fashion, as claimed, contact between the latch and the side of the slot is delayed. During such delay, no friction occurs between

- (1) the latch and the side of the slot, and
- (2) the connector being inserted, and the connector already in the slot (the "handshake").

During such delay, the connector being inserted in the slot is being positioned vertically, with no resistance from the connector already in the slot, since they are not being forced together by contact of the latch with the side of the slot, since there is a delay in such contact due to the curve in the latch.

Because of the substantial reduction in friction in making a connection, as shown in the graphs in the drawings of the application, the work necessary to overcome such

friction, whereby a ceiling can be assembled more efficiently, is also reduced.

The Rejection

Claims 2, 3, and 13 have been rejected under 35 U.S.C. 102(b) as being clearly anticipated by Lickliter et al 3,312,488 (Lickliter '488).

The structure of the connector in the Lickliter '488 patent is entirely different from the locking latch claimed in rejected independent claim 13 and dependent claims 2 and 3.

The locking latch in Lickliter '488 is shown and described as a "spring finger" (col. 2, line 67; Figures 2 and 8), element 42. Clearly, this is a straight latch, that, when contacting the side of the slot is squeezed into the opening 32, so that neck 28 can be inserted completely through the slot 12, after which spring finger 42 can again flex out of the opening 32 and lock neck 28 in slot 12. There is no locking of neck 28 to the neck already in the slot from the opposite direction; hence there is no "handshake" connection between opposing connectors in the slot, in Lickliter '488. The opposing connectors in the slot do not contact one another.

The curve 44 referred to in the rejection is not in the spring finger 42, which is the locking latch that locks the connector to the main beam in Lickliter '488, but rather is on the front end of the neck simply to guide the front of the neck 28 into the slot 12, at the beginning of the insertion through such slot 12. Curve 44 works entirely independently of the straight spring finger 42 locking latch in Lickliter '488. Hence, there is nothing in Lickliter '488 that teaches or suggests the present invention, as claimed, to one skilled in the art.

Claim 13, the independent claim in the present application, further clearly distinguishes from the Lickliter '488 disclosure. The claim, which is in Jepson form, defines the connector of the invention as being "...capable of being stabbed through a slot (23) in the main beam (20) to lock with the main beam (20), and with opposing identical connector (22), already in the slot (23), on a cross beam (27),..."

Lickliter '488 is not capable of locking "...with an opposing connector (22) already in the slot (23), on a cross beam 27,..." (the "handshake" connection).

The Lickliter '488 reference is for a connector on a cross beam that is stabbed through a slot on the main beam, only to connect with the main beam. It does not connect with the opposing connector already in the slot. It is kept separated from the connector already in the slot by the shape of the slot, which has divider tabs (13,15) that extend from the top and bottom of the slot, as seen in his Fig. 7.

Virtually all connectors today in the suspended ceiling art are of the type in the present application, whereas in the connection of the Lickliter '488 patent, which is over 40 years old, the connector on each cross beam only connected with the main beam alone.

It is primarily because of the "handshake" connection that in the present day prior art, large forces are encountered when the connectors in the slot are being engaged, and it is these forces that are being greatly reduced, by the curved locking lever of the invention.

Lickliter '488 does not teach or suggest delaying contact between the connectors in the slot, as set forth in claim 13, by a curve in the locking lever, to greatly

reduce the force, and work, necessary to make a connection between such opposing cross beams in the slot, in a suspended ceiling grid. Lickliter '488 does not have a connection between opposing cross beams in the slot. Lickliter '488 has no such "handshake" connection.

In summary, Lickliter '488 does not have a locking latch (40) formed with a curved portion before extending in straight lever fashion, wherein the curved portion of locking latch (40) is capable of delaying contact of the locking latch (40) with a side of the slot (23) when the connector (21) is stabbed through the slot (23) in the main beam (20), and whereby connector (21) is capable of being adjusted vertically without being forced against the connector (22) already in the slot (23) by the locking latch (40) in contact with a side of slot (23).

The affidavit of Gale E. Sauer, a person skilled in the art of suspended ceilings, supports the above analysis and conclusion. Such affidavit is included in the Evidence Appendix.

(J)

CLAIMS APPENDIX

The following is a copy of the claims involved in the appeal:

Claim 2: The connector (21) of claim 13, wherein the curved portion forms a radius of about .04 inches.

Claim 3: The connector (21) of claim 13, wherein the locking latch (40) is constructed substantially in accordance with the dimensions shown in Figure 2a.

Claim 13: In a connector (21) for a suspended ceiling grid having a main beam (20) and cross beams (26,27),

- wherein a connector (21) on a cross beam (26)

(a) is capable of

being stabbed through a slot (23) in the main beam (20) to lock with the main beam (20), and with an opposing identical connector (22), already in the slot (23), on a cross beam (27), and

(b) has a cantilevered locking latch (40)

integral with and pivoted from a base (41) in the connector (21),

- and wherein,

(c) when the connector (21) is

stabbed through the slot (23) in the main beam (20), the locking latch (40) is capable of contacting a side of a slot (23) and being forced by a side of

the slot (23) to flex toward the base (41) to permit the locking latch (40) to pass through the slot (23), and

- (d) when the connector (21) has been stabbed through the slot (23), the locking latch (40) is capable of flexing back to a relaxed position wherein it is pivoted away from the base (41), to lock the connector (21) on cross beam (26) to the main beam (20),

the improvement comprising

the locking latch (40) formed with a curved portion before extending in straight lever fashion, wherein the curved portion of locking latch (40) is capable of delaying contact of the locking latch (40) with a side of the slot (23) when the connector (21) is stabbed through the slot (23) in the main beam (20), and whereby connector (21) is capable of being adjusted vertically without being forced against the connector (22) already in the slot (23) by the locking latch (40) in contact with a side of slot (23).

No claims have been allowed in the application.

There are no related pending applications, or any patents issued on related applications.

(K)

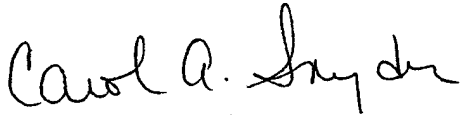
EVIDENCE APPENDIX

Affidavit, including Statement, of Gale E. Sauer is attached.

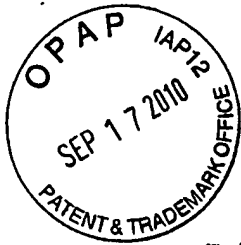
4. I am now retired, and have been for 5 years.
5. I am familiar with many patents relating to the ceiling grid industry. I am also familiar with many products made and sold over the years, in the ceiling grid industry.
6. The attached statement is true to the best of my information and belief.


Gale E. Sauer

Sworn to and subscribed before me this 9 day of
September, 2010.


Notary Public

CAROL A. SNYDER #01SN6028558
Notary Public, State of New York
Qualified in Chautauqua County
My Commission Expires August 2, 2013



STATEMENT

I have read, and studied, and understand, the following:

1. U. S. Patent Application No. 10/754,323 (subject '323 application), filed January 9, 2004, for STAB-IN CONNECTOR.
2. Responses dated March 11, 2010, and April 5, 2010.
3. An Office Action dated May 12, 2010 rejecting the subject '323 application in view of Lickliter et al 3,312,488 (Lickliter '488).
4. The Lickliter '488 patent.

The subject '323 application, at great length, discloses with words, charts, and figures, the invention now claimed, and the benefits secured from such invention. The invention is directed to a connector, used in a ceiling grid, with a locking latch that first extends from a flat base in a curve, and then as a straight lever.

I worked at Flangeklamp Corporation, after the Lickliter '488 patent issued, and am familiar with the subject matter of the Lickliter '488 patent. Mr. Lickliter was the founder and president of Flangeklamp.

In my opinion, the subject matter disclosed and claimed in the subject '323 application was not obvious to one skilled in the ceiling grid industry in view of the Lickliter '488 patent, for the following reasons:

I am familiar with the connector disclosed in United States Patent No. 3,312,488 (Lickliter '488), and the commercial embodiment of such patent, made and sold by Flangeklamp, the assignee of the patent.

I was employed by Flangeklamp when such commercial embodiment was being sold, which was around 1967-1970.

Lickliter '488 is a connector that connects a cross beam to a slot in the main beam. A second cross tee connector is inserted into the same main beam slot from the opposing direction. Each opposing cross tee connector is locked only to the main runner; there is no cross tee to cross tee locking, which is commonly referred to as a "handshake". To the best of my knowledge, there are not any connectors on the market today that can meet current codes without using some form of "handshake". Further, cross tee to main beam locking must be maintained to enable an efficient progressive assembly process.

The connection of the present application connects not only a cross beam to a main beam through a slot, but also in the present invention, the opposing cross beams in the slot connect to each other in a "handshake", as well as to the main beam. Such a connection encounters a frictional resistance in its locking to the main runner, and an added frictional resistance to engage the "handshake".

In Lickliter '488, there is only, in making the connection, the frictional resistance between the cross tee connector and the main beam slot. This is desirable, but the Lickliter '488 connector will not meet today's code requirements for stronger pull apart resistance, since it does not have the "handshake" connection.

In the present invention, as is explained at length in the specification, the required insertions forces can be minimized by extending the locking lever in an arc before extending in a straight line. The benefit, as confirmed in test data, is that far less work is required in assembling the grid of beams in a suspended ceiling.

Virtually all connections in the grid of present day suspended ceilings use both the "handshake" (cross beam to cross beam) and the cross beam to main beam connections. The invention claimed results in faster connections requiring less work to assemble.

The curve 44, in the Lickliter '488 connection, is not prior art. The purpose of curve 44, in Lickliter '488, is simply to guide his connector into the slot, in the event such guidance is necessary. Curve 44 does not bend or pivot, but remains fixed.

As seen in Figure 2 of Lickliter '488, a middle body 34 has a spring finger 42 struck therefrom that extends through a window opening 32 in a rigid bar element 24 that clamps the middle body 34 to the web of the cross beam.

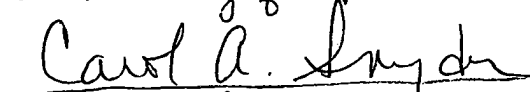
As the connector on the cross beam is inserted through one side of the H figured slot, the locking lever is forced back into the window opening 32 of the bar element 24 to permit the flat bar member to pass through the slot, after which the locking lever springs out to engage the web of the T-beam to lock the cross beam to the main beam.

In summary, it is my opinion that Lickliter '488 is an entirely different locking mechanism than that in the current Application 10,754,323, and that the present invention was not obvious in view of Lickliter '488.

The attached statement is true to the best of my information and belief.


Gale E. Sauer

Sworn to and subscribed before me
this 9th day of September, 2010


Notary Public

(L)

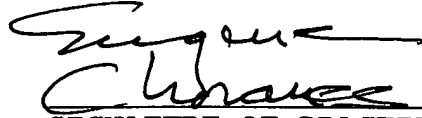
RELATED PROCEEDINGS APPENDIX

None

17 September
2010

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Respectfully submitted,



SIGNATURE OF PRACTITIONER

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